

[0044] Still referring to the same embodiment in FIG. 3 a delaying means 66 may be used to delay the encoder 60 from transmitting the data until all the circuitry of the encoder 60 is powered up and stable. The delaying means 66 is preferably the other half of the OpAmp circuit 64 described above used in conjunction with a plurality of resistors 69 and a capacitor 61. The most preferred OpAmp circuit 64 comprises the model LM 2903 OpAmp circuit identified above. The plurality of resistors 69 most preferably comprises two 10 kilo-ohm resistors 69a and one 100 kilo-ohm resistor 69c. It is also preferred that the capacitor comprises a 0.1 microfarad capacitor 63.

[0046] Still referring to FIG. 3 the transmitting means 54 preferably comprises an encoder 60, which is most preferably the same encoder 60 used for the reading means 46. The encoder 60 transmits data over an RF link 256, shown by line 20, to the base module 22. This is accomplished by using an AM transmitting unit 74 or an FM transmitting unit 76. Preferably, the AM and FM transmitting units 74 and 76 may comprise the AM-RT4-433 unit 74 or the TXM-433-A unit 76, respectively, both manufactured by Abacom Technologies. Each bit of information transmitted by the transmitting means 54 represents one condition. For instance, information pertaining to the three different levels of the container 44-- that is, 3/4 full, 1/2 full and 1/4 full-- and the power level of the first power source 50 comprise four conditions which represents 4-bits of information.

[0047]Next, the receiving means 78 of the base module 22 receives the transmission from the transmitting means 54. In particular, the receiving means 78 comprises a receiver 80 and a decoder 82. In operation, the receiver 80 receives the data sent from the transmitting means 54 and conveys the data to the decoder 82. The receiving means 78 is preferably an RF receiving unit so that it can receive transmissions over the RF link 256, shown by line 20. The preferred receiver 80 comprises either an AM receiver 80a or an FM receiver 80b, most preferably either the AM-HRR3-433 receiver or the SILRX-433-A receiver, respectively, both manufactured by Abacom Technologies. The decoder 82 is preferably a Holtek decoder 82, most preferably the HT-12D unit.

[0053]Continuing the base module 22 preferably has at least one external first-indicator 120 and means for turning on the first-indicator 120. The first-indicator 120 allows human operators to supervise the conditions of the base module 22 by connecting the first indicator 120 to the first processing means of the base module 22. The means for turning on the first indicator 120 most preferably comprises at least one transistor 124, while the first-indicator 120 comprises at least one lamp. The most preferred lamp is at least one light emitting diode (LED) 174. In the most preferred embodiment, the first processing means relays data to the transistors 124 which lights the light emitting diodes 174, thus alerting operators on the scene of any problems. The preferred transistors 124 comprise MPS-A18 transistors. The first-indicator 120 can be used to alert operators regarding the different conditions of the remote location 12, the transmitting module 18 or the base module 22, depending on the preference of the

user. The most preferred conditions indicated comprise: the low power level of the second power source 98 of base module 22; the different levels of the containers 44; telephone dialing in progress; the low power level of the first power source 50 of the transmitting module 18; and that valid data has been received from the transmitting module 18.

[0054] At least one second indicator 194 may be used to supplement the first-indicator 120. The second indicator 194 is most preferably also an LED. The specific process encompassing this embodiment is discussed *infra* and illustrated in FIG. 6B. In the preferred embodiment, the first indicator 120 is a light source that can be seen from a distance to alert operators of potential problems, while the second indicator 194 is an LED 175 on the base unit 22 that can be viewed at a close range thereto. Additionally, multiple first indicators 120 and second indicators 194 may be utilized to indicate different conditions, a sample of which is illustrated in FIG. 6B and its corresponding discussion *infra*. The most preferred LEDs 175 used for the second indicators 194 comprise size T-1 LEDs 175. Resistors 58b may be used in series with the LEDs 175 to limit the current running through the LEDs 175. Preferred resistors comprise 470-ohm resistors 58b.

[0055] The base module may also have reporting means 128 that report conditions at a close proximity to the base module 22. FIG. 3 illustrates the reporting means 128 reporting the conditions of a container 44 located near the base module 22. The reporting means 128 operates in the same manner as the detecting means 14

described above. As such, the reporting means 128 may comprise any of the types of devices discussed for the detecting means 14. But, the most preferred reporting means 128 are switch inputs 88. However, alternatively, ultrasonic ranging units 130 shown schematically in FIG 3 can be used. Either way, the reporting means 128 utilizes wiring 47 to send data from the container 44 to the first processing means 84 of the base module 22. The preferred wiring 47 is hard wire inputs. If an ultrasonic ranging unit 130 is used as the reporting means 128, it would use the first microprocessor's 86 internal timing functions to measure the time it takes for an ultrasonic pulse to travel from the top of a container 44 to the contents 45 therein and, then, back to the top to compute the level of the contents 45 in the container 44. The most preferred ultrasonic ranging units 130 comprise units made by Polaroid. However, if the switch inputs 88 are used, they would be used in the same manner as described above for the detecting means that is, with a float placed on top of the contents 45 within the container 44. Most preferably, each of the switch inputs 88a-88f are connected to connectors to facilitate external connections to the reporting means 128. The preferred connectors comprise dual row 12-pin right angle "Molex Microfit" connectors.